Claims

1. High voltage vacuum tube (9), in which an anode (3) and a cathode (4) are disposed opposite one another in a vacuumized inner space (6) and which vacuumized inner space (6) is enclosed by a cylindrical metal housing (1), the anode (3) and/or the cathode (4) being electrically insulated by means of an annular insulator (21/22), the annular insulator (21/22) comprising a cylindrical part (23/24), and being designed arched once, humped in direction of the vacuumized inner space (6), characterized

in that the arch comprises in direction of the vacuumized inner space (6) a sloping front area (31), a shortened lateral area (30) and a raised lateral area (33), the arch being characterized substantially by angles α, β and γ of the raised lateral area (33), of the front area (31) and of the shortened lateral area (30),

in that said sloping front area (31) of the annular insulator (21/22) with anode-side design slopes toward the disc center (7) of the annular insulator, or respectively with cathode-side design away from the disc center (7) of the annular insulator (21/22),

in that the angle γ between the axial direction (7) of the annular insulator (21/22) and the shortened lateral area (30) is between 10° and 25°,

in that the angle β of the front area (31) to the perpendicular (8) to the axial direction (7) of the annular insulator (21/22) is between 10° and 25°, and

in that the angle α between the raised lateral area to the axial direction (7) of the annular insulator (21/22) is between 10° and 25°.

2. High voltage vacuum tube (9) according to claim 1, characterized in that the three areas (30/31/33) each have a tangential transition radius (R1/R3) of 1 to 7 mm.

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3. High voltage vacuum tube (9) according to one of the claims 1 to 2, characterized in that the annular insulator (21/22) has a fourth area (32) between the raised lateral area (33) and the front area (31), sloping with respect to the perpendicular (8) to the axial direction (7) of the annular insulator (21/22), which fourth area points substantially perpendicularly (8) to the axis (7) of the annular insulator (21/22) in the direction of the vacuumized inner space (6), and which has a tangential transition radius (R2/R3) of 1 to 7 mm to the raised lateral area (33) as well as to the front area (31).

4. High voltage vacuum tube (9) according to one of the claims 1 to 3, characterized in that the raised lateral area (33) projects into the vacuumized inner space (6) at least twice as far as the shortened lateral area (30).

5. High voltage vacuum tube (9) according to one of the claims 1 to 4, characterized in that the raised lateral area (33) has a tapering termination toward the axial direction (7) of the annular insulator (21/22).

6. High voltage vacuum tube (9) according to one of the claims 1 to 5, characterized in that the shortened lateral area (30) has a tapering termination toward the axial direction (7) of the annular insulator (21/22).

7. High voltage vacuum tube (9) according to one of the claims 1 to 6, characterized in that the annular insulator (21/22) is substantially composed of an insulating ceramic material.

8. High voltage vacuum tube (9) according to claim 7, characterized in that the ceramic material of the annular insulator (21/22) is composed of at least 95 % Al_2O_3.

9. High voltage vacuum tube (9) according to one of the claims 1 to 8, characterized in that the cathode (4) comprises an electro-polished and/or mechanically polished metal cylinder (412) on the outer wall (411) facing the annular insulator (21).

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10. High voltage vacuum tube (9) according to one of the claims 1 to 9, characterized in that the high voltage vacuum tube (9) comprises a power supply device, by means of which operational voltages of at least 200 kV are able to be applied at the insulator.

11. High voltage vacuum tube (9) according to one of the claims 1 to 10, characterized in that the high voltage vacuum tube (9) is an X-ray tube.

12. Method of producing a high voltage vacuum tube (9) according to one of the claims 1 to 11, characterized in that a pressing power of at least 1000 bar is used to produce the annular insulator (21/22).

13. Baggage x-raying device, characterized in that it comprises a device for generation of X rays, the device for generation of X rays comprising at least one power supply device by means of which operational voltages of at least 200 kV are able to be generated, and one or more X-ray tubes according to one of the claims 1 to 12.

14. X-raying device for transport containers and/or transport vessels, characterized in that it comprises one or more X-ray tubes according to one of the claims 1 to 12 for generating X rays.

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